

## **SUBMERGIBLE TERRARIUM**

### **Field of the Invention**

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This invention relates in general a terrarium submergible in an aquarium. This invention further relates to an aquarium comprising a submergible terrarium.

### **Background of the Invention**

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Prior art terrariums adapted to be submerged in an aquarium are known. The purpose of such terrariums is generally to modify the habitat of an aquarium by creating by means of an aeration system a dry zone in the terrarium. The purpose of many terrarium-aquarium arrangements is to provide a submerged aerated dry zone in the aquarium suitable for amphibians.

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United States Patent No. 5,313,912 issued to O'Dell on May 24, 1994 discloses an aquarium accessory including a clear dome that is set in place on the habitat floor. The dome has a side opening and at least one top orifice. Air from an aeration system bubbles into the dome through a floor opening, thus creating a dry zone in the dome. Amphibious animals can enter the dry zone and satisfy their need to leave the water periodically, while being confined within the aquarium and remaining fully visible to observers. Air escapes through the top orifice, enabling constant air exchange within the dome. Adjusting airflow from the aeration system varies the volume of the dry zone. The dome includes an outwardly projecting flange that enables the aquarium gravel to anchor the dome within the aquarium. The flange includes perforations sustaining water circulation, as for filtration, within the aquarium.

U.S. Patent No. 4,958,593 which issued on September 25, 1990 to Hulburt et. al relates to a vivarium comprising at least one terrarium

completely submerged in the water in an aquarium. The terrarium and the aquarium shares a common bottom, but are not in fluid communication. The terrarium is accessible through an access opening on the bottom of the terrarium. There can be transparent passageways linking various portions of the terrarium and extending through the aquarium, for travel by animals kept  
5 in the terrarium. There can also be transparent passageways linking various portions of the aquarium and extending through the terrarium, for travel by the marine organisms kept in the aquarium.

10 U.S. Patent No. 3,939,607 issued on February 24, 1976 to Spector relates to a collapsible terrarium assembly which is inflatable to assume a desired configuration for transparently housing a potted plant or other article to be protectively enclosed. The structure is constituted by a disc-like base and a dome attachable thereto. The dome is formed by an open, flexible  
15 plastic envelope whose rim is secured to a coupling ring which is joinable to the base form a hermetically-sealed enclosure, the envelope including a valve for inflating the dome.

U.S. Patent No. 6,283,061B1 which issued to Dunn on September 4,  
20 2001 relates to a terrarium filtering device, apparatus, and method which includes a base filtration plate, a barrier wall, and an environment separation cup. The present invention includes a terrarium filtering system for maintaining a wet environment, a moist environment, and a dry environment within an aquarium tank. The filtering system includes a terrarium filter plate  
25 with a barrier wall to separate the wet and moist areas, water flow holes and water movers connected to a bubbling system to provide aeration and create a water flow, and a passive waste neutralization system. The terrarium filter plate is covered with a filtering media and together they act as a filtering device. Waste material in the water are moved by flowing water to be trapped  
30 in the filtering media, and a porous passive neutralization system is used to offset toxins in the water flow.

U.S. Patent No. 6,176,202B1 which issued on January 23, 2001 to Wood relates to a combination aquarium and terrarium comprising a standard ten-gallon aquarium tank containing water, a physically smaller terrarium and a containment lid. Standard ten-gallon aquarium tanks include a channel shaped band and a channel lip facing the interior of the tank. The terrarium is configured so that, when placed in the tank, the top edges of the terrarium will be positioned between the channel shaped band and the channel lip. A containment lid is provided that mounts on the top side of the channel lip, thereby depressing the terrarium. This downward pressure acts in conjunction with the buoyancy of the terrarium to fix the terrarium in place.

U.S. Patent No. 6,029,605 issued on February 29, 2000 to Licata and relates to a tank providing multiple environments in upper and lower regions of the tank. A land plate divides the tank into the upper and lower regions and provides a terrestrial environment in which terrestrial and amphibious animals can live.

There is a need for a submergible terrarium and aquarium comprising a submergible terrarium that provides ready access to the dry zone of the terrarium to amphibians. There is a further need for a submergible terrarium that is easy and inexpensive to manufacture, and simple to install and operate.

#### Summary of the Invention

An object of one aspect of the present invention is to provide an improved A terrarium adapted to be immersed in an aquarium containing water, the terrarium comprising a shaft means having a first end and second end and a receptacle defining at least one wall, the at least one wall having a length, presenting at least one opening, an air exhaust and an interior wherein the receptacle is connected to the shaft means at the first end wherein the shaft means at the second end is adapted to anchor the receptacle in the

aquarium and wherein the interior of the receptacle is adapted to receive air from an air supply means so as to define a dry zone in the interior.

5 A further object of the present invention is to provide a terrarium adapted to be immersed in an aquarium containing water, the terrarium comprising a hollow shaft having a lower end and an upper end and a receptacle having an interior and defining at least one surface having a lower edge defining at least one opening to said interior and an upper edge connected to said upper end of said hollow shaft, so as to define an air  
10 exhaust wherein the interior of said receptacle is adapted to receive air from an air supply means so as to define a dry zone in the interior and wherein said hollow shaft includes an aperture adjacent to said lower end for communicating air from said interior to said air exhaust.

15 A still further object of the present invention is to provide a method of installing a terrarium in an aquarium containing water, said terrarium presenting a hollow shaft having a lower end and an upper end, said upper end connected to a dome defining an interior and lower edge, comprising the steps of anchoring said lower end of said hollow shaft to said aquarium  
20 introducing air from an air supply means to the interior of said dome adjacent to said lower edge, so as to define a dry zone in said dome exhausting said air from said dome through a first aperture adjacent to said lower end of said hollow shaft and out through said upper end of said hollow shaft to said water in said aquarium.

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#### Brief Description of the Drawings

A detailed description of the preferred embodiment(s) is (are) provided herein below by way of example only and with reference to the following  
30 drawings, in which:

Figure 1 is a perspective view of a first embodiment of the present invention showing the terrarium of the present invention submerged in an aquarium;

5        Figure 2 is a sectional view of the terrarium of the present invention, in the first embodiment thereof, taken at the axis thereof.

Figure 3 is a sectional view of a second embodiment of the present invention, having an extended shaft that includes a weight inside the shaft.

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Figure 4 is a sectional view of a third embodiment of the present invention, in which in the shaft is further extended.

Figure 5 illustrates a fourth embodiment of the present invention, in which the anchor means includes a tray mounted on the shaft.

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Figure 6 illustrates in a sectional view through line 6-6 shown in Figure 5, a representative attachment of the shaft to the central portion of the reservoir.

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Figure 7 illustrates a fifth embodiment of the present invention in which the reservoir defines a central hollow area.

Figure 8 further illustrates the fifth embodiment of the present invention.

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Figure 9 illustrates in an exploded view a sixth embodiment of the present invention, in which the shaft includes one or more interlocking sections.

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Figure 10 illustrates in a sectional view a seventh embodiment of the present invention wherein a particular attachment connects the shaft to the tray and the reservoir.

- 5 Figure 11 illustrates in a further sectional view the sixth embodiment of the present invention wherein the sections of the shaft interlock by means of the attachment shown in Fig. 10.

10 In the drawings, preferred embodiments of the invention are illustrated by way of example. It is to be expressly understood that the description and drawings are only for the purpose of illustration and as an aid to understanding, and are not intended as a definition of the limits of the invention.

15 Detailed Description of the Preferred Embodiment

Referring to Fig. 1, there is illustrated the terrarium and aquarium comprising a terrarium of the present invention. In an aquarium **10**, such as the aquarium of ordinary construction illustrated in Fig. 1, a submergible terrarium **12** is provided. As shown in Fig. 2, the terrarium **12** comprises a shaft means **14** having a first end **15** and second end **17** opposite of the first end.

25 The terrarium also comprises a receptacle **16**, the receptacle defining an interior. As illustrated in Fig. 1, in the first preferred embodiment of the present invention, the receptacle **16** comprises a dome preferably comprising a clear material permitting the interior of the receptacle **16** to be viewed from outside the aquarium. The receptacle **16** is connected to the shaft means **14** at the first end **15**, for example by means of a waterproof adhesive.

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The shaft means **14** comprises a wall **32** and an air passageway **26** inside the shaft means **14**, as best shown in Fig. 2. The shaft means **14**

further comprises an anchor means **34** for anchoring the terrarium **12** inside the aquarium **10**. As best shown in Figs. 2 and 3, the anchor means **34** in the first preferred embodiment of the present invention comprises a weight **40** adjacent to the second end **17** of the shaft means **14**. The weight is adapted to anchor the terrarium **12** in the material **36** such as pebbles or sand presented at the base of the aquarium **10**. In Fig. 3, the anchor means **34** is relatively elongated so as to be further anchored by the material **36**.

Alternatively, as shown in Fig. 4, the anchor means **34** can be further elongated, and may in fact be anchored by the material **36** without a weight disposed inside the anchor means **34**.

The present invention contemplates alternate embodiments of the anchor means **34**, such as a fastening means (not shown). The embodiment illustrated in Fig. 4 could be attached to the bottom of the aquarium **10**, for example using a suitable adhesive. Alternatively, as shown in Fig. 5, the anchor means **34** may include a projecting member that extends axially from the shaft means **14** at the second end **17** so as to anchor the shaft means **14** in material **36**. Specifically as illustrated in Figs. 4, 5, 8, and 9, this projecting member includes a tray **43** type construction that is mounted on the shaft means **14**, through some suitable attachment such as the threaded attachment **41** shown in Figs. 5 and 7. As best illustrated in Fig. 9, the tray **43** includes a side wall **45** that is adapted to retain the materials **36** on the tray **43** thereby anchoring the terrarium **12** of the present invention.

In accordance with the method of installation of the present invention, the terrarium **12** such that it is submerged in the aquarium **10**, and such that the anchor means **34** anchors the terrarium **12** within the aquarium **10**. An air supply means **22** is provided adjacent to the terrarium **12**, as best shown in Fig. 1, such that the air supply means supplies air to the interior of the receptacle **16**. The shaft means further comprises an opening, such that the

air supply means **22** creates an airflow inside the receptacle **16**, as shown in Figs. 1 and 2.

The referred to airflow enters the interior of the receptacle **16** through  
5 the opening as best shown in Fig. 1. The airflow exits the interior of the  
receptacle **16** through air exhaust, as illustrated for example in Fig. 3.. In the  
embodiment of the reservoir of the terrarium of the present invention  
illustrated in Figs. 1-5, the air exhaust is best understood as comprising a first  
one or more apertures **28** and second one or more apertures **30**. The first  
10 one or more apertures **28** are presented on the shaft means **14** adjacent to  
the second end **17**. The second one or more apertures **30** are also presented  
on the shaft means **14**, adjacent to the first end **15**. Each of said first one or  
more apertures **28** and second one or more apertures **30** is presented on  
said wall **32** of the shaft means **14**. Each of said first one or more apertures  
15 **28** and second one or more apertures **30** communicates with the air  
passageway **26**, such that the airflow (given an optimal setting of the air  
supply means **22** that is readily achieved by a normal operator using normal  
settings provided to such an air supply means **22**) in the interior of the  
receptacle **16** tends to circulate in said interior, and then exit through the first  
20 one or more apertures **28**. The airflow then bubbles through the air  
passageway **26**, out through the one or more second apertures **30**, as best  
shown in Fig. 2.

The first one or more apertures **28** in particular include a plurality of  
25 slots **42** best shown in Fig. 4. These slots **42** are preferably presented on the  
shaft means **14** at position that coincides with the desired boundary of the dry  
zone in the interior of the receptacle **16**.

It should also be understood that in the present invention, opening  
30 provides ready access to the interior of the receptacle **16**, for example, to  
amphibians. The opening, as shown in Fig. 2., extends substantially the  
length of the wall **49** of the receptacle, or in the case of the domed structure of

the preferred embodiment, substantially the length of the circumference of the dome. This results overall in a relatively simple structure, and also a structure, that by means of such ready access, amphibians become easily acclimatized to the use of same.

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Figs. 5 and 6 illustrate one particular construction of the present invention, wherein the shaft means **14** includes an upper portion **46** and a lower portion **48** defining that forms part of the anchor means **34**. The upper portion **46** and lower portion **48** interconnect by means of the representative  
10 connecting structure illustrated in Figs. 5 and 6. Figs. 9-11 shown an alternative connecting structure.

Figs. 7 to 9 illustrate an alternate construction of the present invention wherein the receptacle **16** defines a substantially central hollow portion. In  
15 this particular embodiment of the present invention, the air exhaust consists of a single one or more aperture **50**, as opposed to the first one or more apertures **28** and second one or more apertures **30** shown in Fig. 2, for example. The air exhaust in this embodiment is preferably disposed above the bottom end **52** of the receptacle wall **49**. This is to create the dry zone  
20 referred to above, and ensure that the air circulates within the interior of the receptacle **16**, and out of the air exhaust.

Figs. 9 and 11 illustrate a further embodiment of the present invention wherein the lower portion **48** of the shaft means **14** forming part of the anchor  
25 means **34** is stackable. Specifically the lower portion **48** includes two or more sections **50** that can be mounted one on top of the other. This increases the height of the terrarium overall. This is suitable as some users may wish to have the terrarium higher or lower within the aquarium **10**.

30 It should be understood that numerous different embodiments described herein can be used in different combinations. For example, the stackable

lower portion of the shaft illustrated in Fig. 11 can be used with the receptacle structure shown in Fig. 2.

Other variations and modifications of the invention are possible. For example, it is contemplated by the present invention to introduce in the interior  
5 a variety of platforms (not shown) in the interior of the receptacle **16** which are adapted to permit amphibians to breathe air in the interior of the receptacle **16**, while being supported in a resting position on such platforms, without the need for swimming in order to breathe air. All such modifications or variations are believed to be within the sphere and scope of the invention as defined by  
10 the claims appended hereto.